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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,612	08/22/2003	Kenneth S. Collins	6915 P04	8623

7590 09/07/2005

Patent Counsel, M/S 2061
Legal Affairs Dept.
Applied Materials, Inc.
P.O. Box 450-A
Santa Clara, CA 95035

EXAMINER

GHYKA, ALEXANDER G

ART UNIT PAPER NUMBER

2812

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/646,612	Applicant(s) COLLINS ET AL.	
	Examiner Alexander G. Ghyska	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-87 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,5-35,37-47,55-58,70-72,79 and 80 is/are rejected.
- 7) ☒ Claim(s) 2-4,36,48-54,59-69,73-78 and 81-85 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

ALEXANDER GHYKA
PRIMARY EXAMINER

Av 2812
Alex Ghyska

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Applicants' response of August 20, 2005 has been considered and entered in the record. The Applicants' arguments have been considered, but are not persuasive for the reasons as discussed below.

Claim Rejections - 35 USC § 102

Claims 1, 5-10, 12-14, 30, 35, 45, 46, 55-58 and 86-87 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (US 6,139,697) for the reasons as stated in the previous Office action.

Claim Rejections - 35 USC § 103

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 6,139,697) in view of Wu et al (US Patent 4,584,026) for the reasons of record.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 6,139,697) for the reasons of record.

Claims 22-25 and 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (6,139,697) in view of Paton et al (US 6,811,448) for the reasons of record.

Claims 26-29, 32-34, 37-44 and 79-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (Silicon Processing for the VLSI Era, Vol. 1) for the reasons of record.

Claims 15-21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 6,139,697) in view of Chung et al (6,513,538) for the reasons of record.

Response to Applicants' Arguments

Applicants' argue that Chen et al has nothing to do with ion implantation nor plasma immersion ion implantation and lacks elements of Claim 1. As noted by Applicants' Chen et al discloses that the PVD Cu layer integrates into the underlying CVD Cu layer during the PVD deposition, and that the PVD Cu layer contains Sn which is referred to by Chen et al as a dopant. Applicants argue that this is not ion implantation but rather a deposition process in which material from the deposited layer(the PVD Cu layer) happens to diffuse or migrate into the underlying CVD CU layer. The Examiner maintains that the use of the term "dopant" by Chen indicates that some ion implantation does take place, and that therefore the Chen reference meets the present Claim limitations.

Moreover, the Examiner notes that the language "to be implanted" is merely an intended use recitation. In response to applicant's argument that ion implantation takes place, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of

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making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Furthermore, in response to applicant's arguments, the recitation "for implanting ions in a layer of a workpiece" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

With respect to Applicants' arguments that there is no potential applied to the wafer or substrate in Chen et al that would attract ions to the substrate, Applicants' are arguing limitations which are not found in the claims. The limitation "generating from said process gas a plasma by capacitatively coupling RF source power across said workpiece support and said ceiling or said sidewall from an RF source is met by the disclosure of Chen that "a plasma generator 64 is provided for generating a plasma in the process zone 56 ... and capacitatively while applying an RF current to process electrodes in the chamber". See column 9, lines 13-15 and 19-20 and Figure 5. Moreover, Chen et al disclose applying an RF bias using a power supply 92 . See column 10, lines 20-25.

For the above reasons the rejection under 35 USC 102 in view of Chen et al is maintained. With respect to the 35 USC 103 rejections, Applicants' argue in view of the Chen reference. Therefore, the rejections under 35 USC 103 are maintained for the reasons as discussed above in view of the Chen reference, and the reasons of record.

Allowable Subject Matter

Claims 2-4, 36, 48-54, 59-69, 73-78 and 81-85 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims are allowable over the cited prior art for the reasons of record.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGG
September 1, 2005

ALEXANDER GHYKA
PRIMARY EXAMINER

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